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(54) **Method and apparatus for refining the domain structure of electrical steels by local hot deformation and product thereof.**

(57) A method is provided for improving the electrical characteristics of grain-oriented silicon steel sheet (22) by heating the steel to temperatures above 1000 °F (538 °C) and then deforming grooves to refine the magnetic domains, optionally, post heat treating to form fine recrystallised grains in the vicinity of the hot deformations, preferably using protrusions (20) on a scribing roll (16) as the sheet (22) moves between a scribing roll (16) and a back-up anvil roll (14) at deforming pressures range up to 120,000 pounds per square inch (8448 Kg/cm^2).

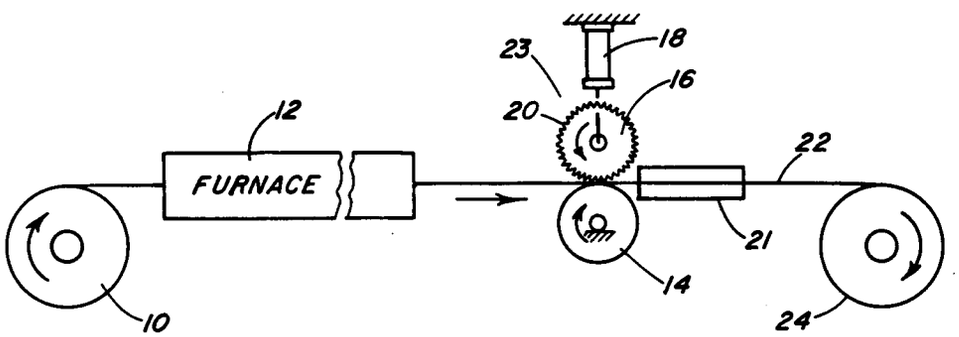

FIG. 1A

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EUROPEAN SEARCH REPORT

Application Number

EP 90 30 5697

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y,D	US-A-4 770 720 (H. KOBAYASHI ET AL.) * claim 1; table 4 *	1	C21D8/12
Y	US-A-4 203 784 (K. KUROKI ET AL.) * column 8, line 61 - column 9, line 2 *	1	
A,D	US-A-4 533 409 (J. G. BENFORD) * claims 1-7 *	1	
A D	EP-A-0 219 181 (NIPPON STEEL) & US-A-4 742 706		
A	EP-A-0 323 155 (KAWASAKI STEEL) * page 5, line 49 - line 53 *	1	
A	PATENT ABSTRACTS OF JAPAN vol. 12, no. 421 (C-541)8 November 1988 & JP-A-63 153 222 (NIPPON STEEL) 25 June 1988 * abstract *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)
C21D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	31 JULY 1992	SUTOR W.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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